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**Bibliography**


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Epitome

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## (57) [Abstract]

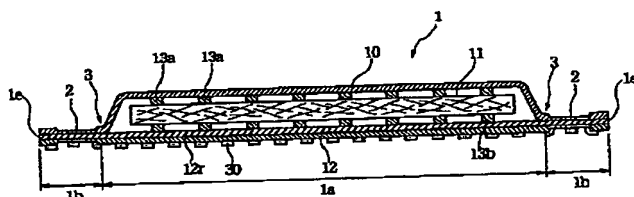
[Technical problem] Conventionally, in water-soluble absorptivity goods, the flesh-side surface layer which made water solubility high had surface reinforcement and the low reinforcement between papers of the thickness direction. Therefore, when removing a flesh-side surface layer from underwear, there was a possibility that a part of fiber which constitutes an adhesive layer and a flesh-side surface layer might adhere and remain in underwear.

[Means for Solution] In absorptivity goods, such as the water-soluble panties liner 1 which has the water-soluble flesh-side surface layer 12, the water-soluble and liquid penetrable surface layer 10, and the flesh-side surface layer 12 and the water-soluble absorption layer 11 pinched between surface layers 10, fibrillation rayon or a microfilament-like cellulose was included in water-dispersion fiber, and said flesh-side surface layer 12 was formed with the water-soluble sheet processed with the water jet. Said fibrillation rayon or a microfilament-like cellulose raises the bond strength between fiber, and water solubility also becomes good. Since the consistency of the external surface of the flesh-side surface layer 12 becomes high and adhesion area with the pressure-sensitive adhesive layer 30 becomes large especially, when removing from underwear after use, neither the pressure-sensitive adhesive layer 30 nor fiber can remain in underwear easily.

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CLAIMS

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[Claim(s)]

[Claim 1] Absorptivity goods characterized by providing the following Flesh-side surface layer The absorption layer installed in the front-face side of said flesh-side surface layer It is a pressure-sensitive adhesive layer for being the water-soluble sheet by which said flesh-side surface layer was formed [ in / have the surface layer of wrap liquid permeability and / the absorptivity goods of at least water solubility / surface layer / said / flesh-side ] of water-dispersion fiber and fibrillation rayon in said absorption layer, and water jet processing was carried out, and making the external surface of this water-soluble sheet fix said flesh-side surface layer to underwear.

[Claim 2] Said fibrillation rayon is absorptivity goods according to claim 1 which are that to which a micro fiber 1mm or less is prolonged by die length on the front face of a rayon fiber with a die length of 1.8-10mm, and said micro fiber occupies 0.1 - 65% of the self-weight of fibrillation rayon on it.

[Claim 3] Absorptivity goods according to claim 1 or 2 with which said fibrillation rayon is 3-40 mass % Contained in the water-soluble sheet which forms said flesh-side surface layer.

[Claim 4] Absorptivity goods characterized by providing the following Flesh-side surface layer The absorption layer installed in the front-face side of said flesh-side surface layer It is a pressure-sensitive adhesive layer for being the water-soluble sheet by which said flesh-side surface layer was formed [ in / have the surface layer of wrap liquid permeability and / the absorptivity goods of at least water solubility / surface layer / said / flesh-side ] by water-dispersion fiber and the microfilament-like cellulose in said absorption layer, and water jet processing was carried out, and making the external surface of this water-soluble sheet fix said flesh-side surface layer to underwear.

[Claim 5] For 100-500 micrometers and the diameter of fiber, fiber length is [ said microfilament-like cellulose ] the water-soluble absorptivity goods according to claim 4 whose viscosity it is 0.001-0.1 micrometers and is 1000 - 10000 mPa-s.

[Claim 6] Absorptivity goods according to claim 4 or 5 with which said microfilament-like cellulose is 1-10 mass % Contained in the water-soluble sheet which forms said flesh-side surface layer.

[Claim 7] JIS of the water-soluble sheet which forms said flesh-side surface layer P8129-1976 Water-soluble absorptivity goods according to claim 1 to 6 whose surface reinforcement (wax NO.) by 2.1 is four or more.

[Claim 8] Water-soluble absorptivity goods according to claim 1 to 7 whose superintendent officer of the water-soluble sheet which forms said flesh-side surface layer is 10 - 50 g/m<sup>2</sup>.

[Claim 9] Water-soluble absorptivity goods according to claim 1 to 8 whose water

solubility of the water-soluble sheet which forms said flesh-side surface layer is 50 or less seconds.

[Claim 10] Absorptivity goods according to claim 1 to 9 with which said flesh-side surface layer and said surface layer are joined possible [ dissociation ] with water in the perimeter of an absorption layer, and said surface layer and said absorption layer have one [ at least ] property of water solubility and biodegradability.

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**DETAILED DESCRIPTION**

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[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the absorptivity goods with which the adhesive layer for fixing to underwear was prepared in the flesh-side surface layer like a panties liner or a sanitary napkin, especially relates to the absorptivity goods of the structure which can be discarded to a rinsing toilet.

[0002]

[Description of the Prior Art] What can be passed and thrown away into a rinsing toilet is developed by absorptivity goods, such as a panties liner and a sanitary napkin. For example, the absorptivity goods which change from a water-soluble absorption layer, and the water-soluble surface layer which sandwiches it and a flesh-side surface layer to JP,8-38547,A and JP,8-19571,A are indicated.

[0003] Moreover, in the panties liner or the sanitary napkin, in order to make it hang on external wearing objects, such as underwear, the pressure-sensitive adhesive layer is prepared in the external surface of a flesh-side surface layer. Said pressure-sensitive adhesive layer is covered with the release paper, said release paper is removed before use of absorptivity goods, and it makes the inside of an external wearing object fix said pressure-sensitive adhesive layer. And after use removes an adhesive layer from an external wearing object, and pours and throws away absorptivity goods into a toilet.

[0004]

[Problem(s) to be Solved by the Invention] Said water-soluble absorptivity goods can be disassembled into the condition of the fiber which constitutes an absorption layer, a surface layer, and a flesh-side surface layer distributing, consequently not stopping a form within a septic tank, when it passes to a rinsing toilet and a lot of water in a septic tank etc. is touched.

[0005] However, generally, when water solubility is raised, it is difficult for the conventional water-soluble material to have the property in which the bond strength of the fiber in dryness and a damp or wet condition becomes low inevitably, and to raise both the both sides of water solubility and reinforcement.

[0006] Although coating of the pressure-sensitive binder for making underwear fix is especially carried out to the flesh-side surface layer of a panties liner or a sanitary napkin If the bond strength between the fiber in the external surface of said flesh-side surface layer is weak, when removing the panties liner after use etc. from underwear, it remains, said pressure-sensitive adhesive layer separated from the external surface of a flesh-side surface layer, and fixed to underwear, and a possibility of adhering to underwear with a pressure-sensitive adhesive layer also has fiber of the external surface of a flesh-side surface layer.

[0007] Moreover, as for said flesh-side surface layer, it is desirable to have elasticity aesthetic property so that the feeling of wearing of the body may be made good and a motion of the body and a motion of underwear can be followed. However, in the conventional hydration paper, when the reinforcement at the time of humidity is not only low, but there is a hard feeling and the body is equipped, there is also a possibility of giving sense of incongruity to the body.

[0008] The purpose of this invention is to offer the absorptivity goods which can be passed to the rinsing toilet where solve the above-mentioned conventional technical problem, raise the surface reinforcement of a flesh-side surface layer in, the adhesive layer and fiber which were prepared in the external surface of a flesh-side surface layer stop being able to adhere to underwear in easily, and said flesh-side surface layer moreover has high water solubility.

[0009]

[Means for Solving the Problem] The 1st this invention has the surface layer of wrap liquid permeability for a flesh-side surface layer, the absorption layer installed in the front-face side of said flesh-side surface layer, and said absorption layer, and said flesh-side surface layer sets it on water-soluble absorptivity goods at least. Said flesh-side surface layer is the water-soluble sheet by which water jet processing was formed and carried out of water-dispersion fiber and fibrillation rayon, and is characterized by preparing the pressure-sensitive adhesive layer for making underwear fix said flesh-side surface layer in the external surface of this water-soluble sheet.

[0010] For example, a micro fiber 1mm or less is prolonged on the front face of a rayon fiber with a die length of 1.8-10mm, and, as for said fibrillation rayon, die

length occupies 0.1 – 65% of the self-weight of said micro fiber of fibrillation rayon on it.

[0011] Moreover, it is desirable 3–40 mass % That said fibrillation rayon is contained in the water-soluble sheet which forms said flesh-side surface layer.

[0012] The 2nd this invention has the surface layer of wrap liquid permeability for a flesh-side surface layer, the absorption layer installed in the front-face side of said flesh-side surface layer, and said absorption layer, and said flesh-side surface layer sets it on water-soluble absorptivity goods at least. Said flesh-side surface layer is the water-soluble sheet by which water jet processing was formed and carried out by water-dispersion fiber and the microfilament-like cellulose, and is characterized by preparing the pressure-sensitive adhesive layer for making underwear fix said flesh-side surface layer in the external surface of this water-soluble sheet.

[0013] For example, fiber length is [ 100–500 micrometers and the diameter of fiber ] 0.001–0.1 micrometers, and the viscosity of said microfilament-like cellulose is 1000 – 10000 mPa-s.

[0014] Moreover, it is desirable 1–10 mass % That said microfilament-like cellulose is contained in the water-soluble sheet which forms said flesh-side surface layer.

[0015] JIS of the water-soluble sheet which forms said flesh-side surface layer in said both invention P8129-1976 It is desirable that the surface reinforcement (wax No.) by 2.1 is four or more, and it is desirable that the superintendent officer of the water-soluble sheet which forms said flesh-side surface layer is 10 – 50 g/m<sup>2</sup>. Moreover, it is desirable that the water solubility of said water-soluble sheet is 50 or less seconds.

[0016] In addition, in this invention, said flesh-side surface layer and said surface layer are joined possible [ dissociation ] with water in the perimeter of an absorption layer, and that in which said surface layer and said absorption layer have one [ at least ] property of water solubility and biodegradability is desirable.

[0017] In the absorptivity goods of this invention, the flesh-side surface layer is formed at least with the water-soluble sheet which fiber separates with a lot of water. Moreover, preferably, a surface layer and an absorption layer are formed with a natural fiber or a biodegradability ingredient, and distribution or decomposition of them is enabled within the septic tank.

[0018] Said adhesive layer can adhere to underwear etc., or it can prevent that can make high surface reinforcement of a flesh-side surface layer, the fixing reinforcement of the pressure-sensitive adhesive layer to this flesh-side surface layer becomes high, and the fiber of a flesh-side surface layer adheres to the water-soluble sheet which forms said flesh-side surface layer by what fibrillation rayon or a microfilament-like cellulose is included for (the both sides of said fibrillation rayon and a microfilament-like cellulose may be included).

[0019]

[Embodiment of the Invention] Hereafter, this invention is explained, referring to a drawing. The perspective view which looked at the panties liner whose drawing 1 is



the gestalt of 1 operation of the absorptivity goods of this invention from the side front (side which meets a wearing person), the top view which looked at the panties liner which shows drawing 2 to drawing 1 from the side front, the sectional view of the III-III line of the panties liner which showed drawing 3 to drawing 1 and drawing 2, and drawing 4 are the bottom views which looked at the panties liner shown in drawing 1 and drawing 2 from the background. In addition, the longitudinal direction (lengthwise direction) of absorptivity goods is made into the direction of Y, and the cross direction (longitudinal direction) which intersects perpendicularly with the direction of Y mostly is made into the direction of X.

[0020] The panties liner 1 shown in drawing 1 and drawing 2 consists of water-soluble absorption layers 11 pinched between the water-soluble and liquid penetrable surface layer 10 turned to a wearing person side as shown in drawing 3, the water-soluble flesh-side surface layer 12, and a surface layer 10 and the flesh-side surface layer 12. Moreover, coating of the water-soluble thermoplastics layer 12r is carried out to the front-face side of the flesh-side surface layer 12.

[0021] In periphery field 1b which opened predetermined width-of-face spacing from periphery 1e of the panties liner 1 and which is a field to a boundary line 3, the laminating of a surface layer 10, the flesh-side surface layer 12, and the thermoplastics layer 12r is carried out. As the absorption layer 11 is surrounded in this periphery field 1b, heating pressure treatment is performed, water-soluble thermoplastics layer 12r fuses, and the round seal section 2 which joins a surface layer 10 and the flesh-side surface layer 12 is formed. Furthermore, in staging-area 1a inside a boundary line 3, Adhesives 13a and 13b opened spacing mutually the shape of a spiral, and in the shape of polka dots, distributed the whole region between each class, it was prepared, and the surface layer 10 and the absorption layer 11 pasted up, and thermoplastics layer 12r on the flesh-side surface layer 12 and the absorption layer 11 have pasted up.

[0022] Furthermore, as shown in drawing 3 and drawing 4, the pressure-sensitive adhesive layer 30 for making the inside of external wearing objects, such as underwear, fix the panties liner 1 at the time of use is formed in the background of the flesh-side surface layer 12. Moreover, the release paper protected just before use is formed in the front face of the pressure-sensitive adhesive layer 30. Said release paper is removed at the time of wearing of the panties liner 1, the panties liner 1 is installed in the KUROTCHI section inside external wearing objects, such as underwear, and the pressure-sensitive adhesive layer 30 prepared in the background external surface of a body fixes to the inside of the KUROTCHI section. The panties liner 1 after use is removed from the inside of underwear, and discards the panties liner 1 underwater. The fiber which each class dissociates with a lot of water in the septic tank of a rinsing toilet, and constitutes each class distributes the discarded panties liner 1 scatteringly bywater.

[0023] With the gestalt of operation of the 1st this invention, said flesh-side surface layer 12 is the water-soluble sheet (span ball-race sheet) by which water jet

processing was formed and carried out of water-dispersion fiber and fibrillation rayon, said flesh-side surface layer 12 is formed with said water-soluble sheet of one sheet, or said water-soluble sheet piles up two or more sheets, and said flesh-side surface layer 12 is formed. And said pressure-sensitive adhesive layer 30 is formed in the external surface of the water-soluble sheet which forms said flesh-side surface layer 12.

[0024] Said water-dispersion fiber is fiber with the sufficient dispersibility over water. With the dispersibility over water here, it is the same semantics as water solubility, and is the thing of the property in which fiber becomes scattering, by contacting a lot of water.

[0025] A natural fiber and/or a chemical fiber can be used as water-dispersion fiber used in this invention. The polylactic acid fiber which is wood pulp, such as softwood pulp and hardwood pulp, Manila hemp, a kenaf, linter pulp, the rayon which is regenerated-cellulose fiber as a chemical fiber and fibrillation rayon, the polypropylene that is a synthetic fiber, polyvinyl alcohol, polyester, the poly acrylic nitril, and synthetic biodegradability fiber as a natural fiber is raised. As for natural fibers, such as pulp and a kenaf, rayon, polylactic acid, etc., also in these, it is desirable to use fiber with biodegradation. As a natural fiber, using pulp 600 cc or less or rayon especially preferably has a desirable degree of beating in respect of water-dispersion 700 cc or less.

[0026] As for the fiber length of these water-dispersion fiber, it is desirable that it is 2-20mm from the water-soluble point of a fiber sheet. It is 2-10mm still more preferably. Moreover, when using rayon as water-dispersion fiber, as for the fineness, 1.1 - 3.3dtex is used preferably.

[0027] Said fibrillation rayon is that beating of the rayon fiber is carried out, and a micro fiber is prolonged on the front face of the fiber body of a rayon fiber. First, fibrillation rayon dissolves pulp in organic solvents, such as for example, N-methyl morpholine-N-oxide (MMNO), and forms the fibrin material which carried out spinning underwater. If this fibrin material forms the fine structure while the crystal structure of the cellulose in pulp had been held, and beating of this is carried out, the fibrillation rayon with which the micro fiber was prolonged on the front face of a fiber body will be obtained.

[0028] Die length is 1mm or less, and, as for the fiber length of said fiber body of fibrillation rayon, a micro fiber occupies 0.1 - 65% to the mass of the whole fibrillation rayon, as for 1.8-10mm and said micro fiber. The fineness of fibrillation rayon has desirable 1.1 - 1.9dtex. 700 cc or less may be 600 cc or less desirable still more preferably, and a degree of beating may be 400 more cc or less.

[0029] The flesh-side surface layer 12 of this invention forms fiber Webb in whom said water-dispersion fiber was formed in by 97 to 60 mass %, and said fibrillation rayon was formed by 3 - 40 mass % by the wet method on a mesh-like wire, and gives and processes a stream (water jet) to this fiber Webb. With this sheet, while water-dispersion fiber makes the confounding of the hydration possible, the micro

fiber of fibrillation rayon carries out a confounding to the fiber body of said water-dispersion fiber and said fibrillation rayon. Moreover, the reinforcement of a sheet is maintained by hydrogen bond with the OH radical of the front face of a micro fiber and water-dispersion fiber, such as rayon and pulp. Moreover, if it passes in a rinsing toilet and a lot of water is given, association with said micro fiber and fiber will separate, and fiber will collapse scatteringly.

[0030] Thus, with said water-soluble sheet, by using the bonding strength between fiber of the micro fiber of fibrillation rayon, reinforcement of the flesh-side surface layer 12 can be made high, and decomposition by Mizuuchi also becomes quick. In order to balance this water solubility and sheet reinforcement, it is desirable that the die length of water-dispersion fiber is [ the die length of the fiber body of 2-10mm and fibrillation rayon ] 1.8-10mm as mentioned above. If the reinforcement of the flesh-side surface layer 12 falls that the die length of each fiber is said following and the above is exceeded, the bonding strength by the confounding of fiber will become high too much, and water solubility will worsen. Moreover, if the degree of beating of fibrillation rayon exceeds 700 cc or 600 cc, the amount which a micro fiber occupies will decrease and the bond strength between fiber will fall.

[0031] Moreover, since water jet processing of said flesh-side surface layer 12 is carried out, the whole is elasticity. Especially, the reinforcement, and a bulky feeling and a feeling of elasticity of the whole flesh-side surface layer 12 can be presented as the superintendent officer of the flesh-side surface layer 12 is 10 - 50 g/m<sup>2</sup>.

[0032] Between water-dispersion fiber is filled with a micro fiber in the front face of a sheet, and, as for the flesh-side surface layer 12 formed with this water-soluble sheet, the consistency in the front face of the flesh-side surface layer 12 is high. Therefore, when coating of the pressure-sensitive binder 30 is carried out to the external surface of the flesh-side surface layer 12, the adhesion area of said external surface and pressure-sensitive adhesive layer 30 becomes large, and the pressure-sensitive adhesive layer 30 stops being able to separate easily from the external surface of the flesh-side surface layer 12. In the external surface of the flesh-side surface layer 12, since said micro fiber has fixed firmly for fiber by hydrogen bond, when the exfoliation force acts between the external surface of the flesh-side surface layer 12, and the pressure-sensitive adhesive layer 30, fiber cannot exfoliate furthermore easily by the appearance of the flesh-side surface layer 12.

[0033] Therefore, when removing the panties liner after use from underwear, the pressure-sensitive adhesive layer 30 cannot remain in an underwear side easily, and the fiber of the external surface of the flesh-side surface layer 12 cannot remain in an underwear side easily.

[0034] With the gestalt of operation of the 2nd this invention, said flesh-side surface layer 12 is formed by said water-dispersion fiber and the microfilament-like cellulose (Microfibrillated Cellulose).

[0035] Said microfilament-like cellulose grinds a cellulose and it carries out beating

to the condition near microfibril. As the main manufacture approaches, special processing can be mechanically performed for this in the state of water suspension by the ability using pulp as a raw material, and cutting of fiber shaft orientations is suppressed, and beating can be carried out to the degree of pole, and it can obtain long and slender as a configuration — it is fibrous, and fiber length is 100–500 micrometers, the diameter of fiber is 0.001–0.1 micrometers or 0.01–0.1 micrometers, it is in the condition near the so-called microfibril, and a microfilament-like cellulose is the microfilament of water-insoluble nature.

[0036] What included said microfilament-like cellulose in said water-dispersion fiber is supplied on a mesh-like wire with wet, fiber Webb is formed, a stream is given to this fiber Webb, and a water-soluble sheet is obtained.

[0037] while water-dispersion fiber makes the confounding of the hydration possible with this water-soluble sheet by which water jet processing was carried out — between water-dispersion fiber — a microfilament-like cellulose — detailed — are-izing, it mixes and a microfilament-like cellulose and water-dispersion fiber carry out hydrogen bond. Thus, a microfilament-like cellulose functions as an enhancement agent of the bonding strength between fiber, and becomes what was excellent in respect of balance with water solubility and sheet reinforcement.

[0038] Moreover, the consistency is high in a microfilament-like cellulose existing between water-dispersion fiber in a sheet front face. Therefore, like the gestalt of said 1st operation, the adhesion area on the front face of a sheet with the pressure-sensitive adhesive layer 30 becomes large, and the pressure-sensitive adhesive layer 30 stops being able to separate easily from the external surface of the flesh-side surface layer 12. Moreover, on the front face of the flesh-side surface layer 12, since the hydrogen bond force with said microfilament-like cellulose firm between fiber is demonstrated, even if the exfoliation force acts between the pressure-sensitive adhesive layer 30 and the flesh-side surface layer 12, it is hard to separate the fiber of the front face of the flesh-side surface layer 12. Therefore, when removing the panties liner 1 after use from underwear, neither an adhesive layer 30 nor fiber can remain in the inside of underwear easily.

[0039] If the ease of carrying out of hydrogen bond changes and whenever [ water retention ] uses a high microfilament-like cellulose according to the conditions of detailed-izing at the time of manufacture, even if said microfilament-like cellulose has the little loadings of this microfilament-like cellulose, it can obtain a sheet with high reinforcement. Moreover, if a lot of water is touched, the hydrogen bond of said microfilament-like cellulose will separate and water-dispersion fiber will decompose. In order to speed up distribution by Mizuuchi of the sheet at this time, it is desirable that it is the range whose die length of water-dispersion fiber is 2–10mm.

[0040] At this invention, it is JAPAN. TAPPI It is desirable to use the microfilament-like cellulose whenever [ in paper pulp test-method No.26 / water retention / whose ] is 250% or more. In this case, water-dispersion fiber is 90 to 99 mass %, and, as for the blending ratio of coal of a water-dispersion fiber and microfilament-like

cellulose, it is desirable that a microfilament-like cellulose becomes 1 – 10 mass %. Reinforcement at the time of desiccation of the water-soluble sheet which forms the flesh-side surface layer 12 as it is this blending ratio of coal, and humidity can be made high, and water solubility also becomes good.

[0041] moreover When using the microfilament-like cellulose whenever [ said water retention / whose ] is 350% or more, if the loadings of a microfilament-like cellulose are one to 5 mass %, reinforcement at the time of desiccation and humidity can be made high, and water solubility will also become good.

[0042] Moreover, 1000 – 10000 mPa·s is desirable still more desirable, and the viscosity of said microfilament-like cellulose is 4000 – 8000 mPa·s. Bond strength between fiber according that the viscosity of a microfilament-like cellulose is said range to hydrogen bond can be made high, and it becomes a water-soluble good thing.

[0043] Using a Brookfield viscometer, Rota No.4 are used for said viscosity, it sets a rotational frequency as 30rpm(s), makes a sample what mixed the microfilament-like cellulose of 2 mass % in the water of 98 mass %, and measures it under an environment with a humidity of 25 degrees C.

[0044] Moreover, also in the gestalt of the 2nd operation, the eyes of the flesh-side surface layer 12 have desirable 10 – 50 g/m<sup>2</sup>.

[0045] The water-soluble sheet used as a flesh-side surface layer 12 in the gestalt of said 1st operation and the gestalt of the 2nd operation is JIS. P8129-1976 The surface reinforcement (wax No.) by 2.1 is four or more, it is desirable that the reinforcement between papers is 2.0Ns / 18mm or more, and it is desirable that water solubility is 50 or less seconds. Furthermore, it is desirable still more desirable that it is 8Ns or more per 25mm width of face, and the reinforcement of MD and CD at the time of desiccation of a water-soluble sheet is 10Ns or more.

[0046] The flesh-side surface layer 12 of the gestalt of said 1st operation is that fibrillation rayon is included, the reinforcement of a sheet and water-soluble balance are maintained and the reinforcement of a sheet and water-soluble balance are maintained by including a microfilament-like cellulose with the gestalt of the 2nd operation. Therefore, it is not necessary to include a binder in said sheet.

[0047] However, in order to make still higher surface reinforcement of the flesh-side surface layer 12, and reinforcement between papers, the binder of water solubility, such as alkyl cellulose, such as denaturation polyvinyl alcohol, such as a water-insoluble nature carboxymethyl cellulose, polyvinyl alcohol, carboxylic-acid denaturation polyvinyl alcohol, and sulfonic-acid denaturation polyvinyl alcohol, and methyl cellulose, starch, denaturation starch, sodium polyacrylate, sodium alginate, and polyethylene oxide, or water bloating tendency may be included.

[0048] Next, said pressure-sensitive adhesive layer 30 is formed in the shape of polka dots all over the external surface of the flesh-side surface layer 12, as shown in drawing 4 . the configuration of the pressure-sensitive adhesive layer 30 in this case — a diameter — 10mm or less — 1mm or more — it is a circle configuration

mostly, and spacing is opened in a lengthwise direction and a longitudinal direction, and it is formed as a regular or irregular pattern in the fixed pitch. The coating pattern of the pressure-sensitive adhesive layer 30 is not restricted in the shape of [ said ] polka dots, and the pattern of the shape of a stripe and a rectangle (rectangle) may arrange it regularly. However, even if it is which pattern, it is desirable that the rate of area which said pressure-sensitive adhesive layer 30 to the external surface of the flesh-side surface layer 12 occupies is about 10 – 50%. Or coating of said pressure-sensitive adhesive layer 30 may be thinly carried out throughout the external surface of said flesh-side surface layer 12.

[0049] Although anythings can be used if the binder which forms said pressure-sensitive adhesive layer 30 is a binder usually used as a hanging means of absorptivity goods, the binder of the water bloating tendency which is drainage system emulsions, such as an acrylic emulsion especially with a hydrophilic protective colloid layer, and water-soluble polyvinyl alcohol are used.

[0050] With the gestalt of operation of this invention, thermoplastics layer 12r prepared in the front-face side of the flesh-side surface layer 12 is formed with water solubility or a water bloating tendency polyvinyl alcohol film, and laminates on the flesh-side surface layer 12. By preparing this thermoplastics layer 12r, the liquid absorbed in the absorption layer 11 can prevent now permeating the flesh-side surface layer 12. However, the adhesives 13a and 13b by which coating is carried out to staging-area 1a are water solubility or water bloating tendency, for example, the hot melt of polyvinyl alcohol is used.

[0051] As for said absorption layer 11, it is desirable to be formed from for example, hydration paper, pulp, or a sheet. For example, it can form using eyes 50 – about two 70 g/m air RAID pulp etc. When forming in hydration paper, and two or more sheets of hydration papers with comparatively thin thickness are formed in piles, water solubility is good and desirable. Moreover, for example, eyes form the absorption layer 11 for about 4–8 sheets of hydration papers which are 10–20g/m<sup>2</sup> in piles. Moreover, the laminating of the hydration paper which applied water bloating tendency resin, such as polyvinyl alcohol, may be carried out, and it may be formed.

[0052] A surface layer 10 is a water-soluble span ball-race sheet. Or a water-soluble sheet may be made to carry out the laminating of two or more sheets of hydration papers, and they may be formed in it. In this case, a sheet and hydration paper may be made to unify by hydrogen bond or needling processing. Moreover, as for a surface layer 10, it is desirable that two or more apertures are extensively prepared as shown in drawing 1 in order to lead elimination liquid to the absorption layer 11 under a surface layer 10.

[0053] In addition, in this invention, as long as said comparatively thick flesh-side surface layer 12 which contributes to maintenance of the configuration of absorptivity goods, such as a panties liner, is water solubility, other surface layers 10 or absorption layers 11 may not necessarily be water-soluble materials. If it is comparatively thin small absorptivity goods like the panties liner 1, even if said

surface layer 10 and absorption layer 11 are non-water solubility, it is possible to make it decompose, when it exists in a septic tank for a long period of time.

[0054] For example, as long as said absorption layer 11 is thin and small, it may be a nonwoven fabric, paper of non-water solubility, etc. of non-water solubility. However, as for the material which forms these, it is desirable that they are a natural fiber and biodegradability fiber. Moreover, a surface layer 10 may be the puncturing sheet formed by the thin nonwoven fabric (nonwoven fabric preferably formed for a natural fiber or biodegradability fiber) of non-water solubility, or the resin of biodegradability.

[0055] Moreover, in order to speed up distribution and decomposition within a septic tank, in the perimeter of said absorption layer 11, it is desirable to be joined with the means which the flesh-side surface layer 12 and a surface layer 10 can dissociate with water. As this junction means, water-soluble adhesives, such as said polyvinyl alcohol, are used, and also the flesh-side surface layer 12 and a surface layer 10 may be joined with mechanical junction means, such as needling processing.

[0056] As mentioned above, although the panties liner was explained as water-soluble absorptivity goods of this invention, the absorptivity goods of this invention may be sanitary napkins which have the adhesive layer which fixes to underwear or sanitary briefs.

[0057]

[Example] Although an example is given and this invention is explained hereafter, this invention is not limited to this.

[0058] ((A) Example) The water-soluble sheet used as a flesh-side surface layer 12 of the water-soluble panties liner 1 was created, and the physical-properties trial was performed.

[0059] In the Example A, said water-soluble sheet was created of needle-leaved tree bleached kraft pulp (NBKP:CSF=600cc), rayon (1.1dtex, fiber length of 5mm), and fibrillation rayon. Fibrillation rayon carries out beating of the fibrin material (product name made from AKODISU "Tencel") which dissolved in the organic solvent and carried out spinning of the pulp underwater, and is obtained. The fiber length of a fiber body used the thing whose degree of beating is 200 cc in 5mm, said whose fiber length a degree of beating is 600 cc in 5mm and whose degree of beating is 200 cc in 3mm, and said fiber length considered as the compounding ratio (mass %) which shows said each ingredient in Table 1. Moreover, what does not contain fibrillation rayon was made into the example A of a comparison.

[0060] Fiber Webb who mixed the ingredient of said compounding ratio underwater and mixed on the mesh-like wire was formed, and to obtained fiber Webb, the stream (water jet) was given, and it processed, and was made to dry after that. Water jet processing conditions made fiber Webb's bearer rate 30 m/min, have arranged the nozzle of 100 micrometers of apertures in 1.0mm pitch in Webb's conveyance direction and the direction to cross, set the discharge pressure of the stream from a nozzle to 2.94MPa(s), and performed this water jet processing twice to the same fiber Webb. The superintendent officer and thickness of a water-soluble sheet which

were obtained are as being shown in Table 1.

[0061] (Water solubility) The water-soluble trial was performed based on the toilet paper \*\*\*\*\* easy trial. When detail was given, what cut the sheet of said each example and the example of a comparison to 10cm by 10cm was supplied to the beaker into which 300ml of ion exchange water was put, and it agitated using the rotator. A rotational frequency is 600rpm. However, terms and conditions, such as said rotator, are JIS. It applied to the convention correspondingly P4501. The distributed condition of the fiber sheet at this time was observed visually with time, and time amount until it distributes was measured (a unit is a second).

[0062] (Baked strength) Using as a sample what judged each example and the example of a comparison in width-of-face die length of 150mm of 25mm, with the tensilon testing machine, chuck spacing was held by 100mm, it pulled by speed-of-testing 100 mm/min, and breaking strength was measured. Measurement was performed to the lengthwise direction (MD:Machine Direction) of paper, and the longitudinal direction (CD:CrossDirection) of paper, respectively (measured value is expressed with N/25mm in a table).

[0063] (Surface reinforcement) JIS P8129-1976 It measured by the approach using the wax of 2.1. Wax No. is shown in Table 1.

[0064] (Reinforcement between papers) 18mmx15mm polyester adhesive tape (the NITTO DENKO make, "No.31B75 yes") was stuck on each of both sides of the water-soluble sheet of Example A and the example A of a comparison. Then, the roller with a mass of 500g was made to transmit on a tape at the rate of rate 5 m/min, and the load was given. The edge with a width of face [ of said tape made to adhere to the front flesh side of a sheet after that ] of 18cm has been held, it is the thickness direction of a sheet and tension and the maximum load at that time were measured for both tapes of each other by rate 100 mm/min in the reverse sense direction of 180 degrees. In Table 1, N/18mm of units shows measured value.

[0065] The above-mentioned result is shown in Table 1.

[0066]

[Table 1]



	実施例A1	実施例A2	実施例A3	実施例A4	実施例A5	比較例A1	比較例A2
NBKP (叩解度: 600cc)	90%	85%	80%	85%	85%	95%	80%
レーヨン (1. 1dtex 5mm)	5%	5%	5%	5%	5%	5%	20%
ファイバリル化レーヨン (5mm, 200cc)	5%	10%	15%	—	—	—	—
ファイバリル化レーヨン (5mm, 600cc)	—	—	—	10%	—	—	—
ファイバリル化レーヨン (3mm, 200cc)	—	—	—	—	10%	—	—
目付 $\text{g/m}^2$	25.3	24.9	25.1	25.2	25.0	24.6	24.8
厚み mm	0.124	0.125	0.124	0.126	0.125	0.125	0.125
水解性 sec	22	23	26	30	19	25	30
DRY-MD強度 N/25mm	18.3	19.4	17.5	12.9	17.5	14.7	18.8
DRY-CD強度 N/25mm	13.9	14.8	13.4	10.1	13.5	11.2	13.9
表面強度 (ワックスNo.)	6	7	8	5	6	2	2
紙間強度 N/18mm	2.1	3.1	3.7	2.0	2.8	1.5	1.2

[0067] Next, said example A and the example A of a comparison were used as a flesh-side surface layer 12, and the panties liner of the structure shown in drawing 1-4 was created. The longitudinal dimension of this panties liner is 140mm, and a width-of-face dimension is 55mm. As for the wet span ball-race sheet of eyes 45 g/m<sup>2</sup>, and the absorption layer 11, the surface layer 10 used the air RAID pulp of eyes 60 g/m<sup>2</sup>. Furthermore, the pressure-sensitive adhesive layer 30 for making a panties liner hang on underwear was formed using the acrylic emulsion, and was prepared in the shape of polka dots. Ten monitors were made to carry this panties liner for 8 hours, the panties liner was removed from underwear after that, and the following observation was performed. And each monitor performed said wearing trial by a unit of 2 times.

[0068] (Wear test: Paste remainder) As a result of a total of 20 wear tests, after removing a panties liner, the count by which the paste remained in underwear was investigated.

[0069] (Wear test: \*\*\*\*) After removing a panties liner as a result of a total of 20 wear tests, the count which fiber separated from the external surface of a flesh-side surface layer, and remained in underwear was investigated.

[0070] A result is shown in Table 2.

[0071]

[Table 2]

	(8時間装着)						
着用テスト	実施例A1	実施例A2	実施例A3	実施例A4	実施例A5	比較例A1	比較例A2
糊残り	0	0	0	0	0	13回	14回
材破	0	0	0	0	0	4回	4回

[0072] ((B) Example) The sheet used as a flesh-side surface layer 12 of the water-

soluble panties liner 1 was created as an example B, and the same physical-properties trial as said example A was performed.

[0073] In the Example B, as an ingredient of said sheet, needle-leaved tree bleached kraft pulp (NBKP:CSF=600cc), rayon (1.1dtex, fiber length of 5mm), and a microfilament-like cellulose were used, and it considered as the compounding ratio (mass %) which shows said each ingredient in Table 3. Moreover, what does not contain a microfilament-like cellulose was made into the example B of a comparison.

[0074] The product name "SERISSHU (KY-100 general purpose type):viscosity 6000 mPa-s" by the die cel chemistry company was used for the microfilament-like cellulose. The diameter of fiber carries out [ this ] detailed fibrillation of the pulp to about 0.01 micrometers. Moreover, as a microfilament-like cellulose, product name "MIKUSERU (fine type):viscosity 4500 mPa-s by the die cel chemistry company was used. A fiber system carries out [ this ] detailed fibrillation of the linter pulp to 0.1 micrometers or less.

[0075] It blended with the compounding ratio (mass %) which shows said each ingredient in Table 3, and sheet-ized on the same conditions as Example A.

[0076] And each physical-properties value and a wear test were measured like Example A. Each result is shown in Table 3 and Table 4.

[0077]

[Table 3]

	実施例B1	実施例B2	実施例B3	実施例B4	実施例B5	比較例B1
NBKP(叩解度:600cc)	94%	92%	90%	92%	90%	95%
レーヨン(1.1dtex 5mm)	5%	5%	5%	5%	5%	5%
微小繊維状セルロース						
セリッシュ	1%	3%	5%	—	—	—
微小繊維状セルロース						
ミクセル	—	—	—	3%	5%	—
目付 $\text{g/m}^2$	24.9	25.1	25.3	25.4	24.9	24.6
厚み mm	0.124	0.121	0.117	0.122	0.118	0.125
水解性 sec	29	34	48	28	34	25
DRY-MD強度 N/25mm	16.1	18.3	23.2	17.1	18.3	14.7
DRY-CD強度 N/25mm	12.4	14.1	17.7	13.1	13.9	11.2
表面強度 (ワックスNo.)	4	6	9	5	7	2
紙間強度 N/18mm	2.1	2.8	3.4	2.3	3.0	1.5

[0078]

[Table 4]

	(8時間経着)					
着用テスト	実施例B1	実施例B2	実施例B3	実施例B4	実施例B5	比較例B1
糊残り	2回	0	0	0	0	13回
材質	2回	0	0	0	0	4回

[0079] As shown in said Table 1 thru/ or 4, at the panties liner using the sheet whose reinforcement between papers of the thickness direction surface reinforcement is 2.0Ns / 18mm or more or more in four as a flesh-side surface layer, it has checked that neither a part of paste remainder nor flesh-side surface layer remained in underwear as a result of a wear test.

[0080]

[Effect of the Invention] In the water-soluble absorptivity goods of this invention, as explained in full detail above, though high water solubility is maintained, since surface reinforcement and the reinforcement between papers of the thickness direction are high, a flesh-side surface layer has the high configuration holdout at the time of use, and endurance is high [ a surface layer ]. Furthermore, when removing after use the absorptivity goods joined to the external wearing object through the adhesive layer prepared in the external surface of a flesh-side surface layer from an external wearing object, neither a flesh-side surface layer nor fiber can remain in an external wearing object easily.

[0081] Moreover, since the flesh-side surface layer is formed with the water-soluble sheet obtained by carrying out water jet processing, a bulky feeling and a feeling of elasticity can be presented.

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[Translation done.]

**\* NOTICES \***

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**DESCRIPTION OF DRAWINGS**

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[Brief Description of the Drawings]

[Drawing 1] The perspective view of the absorptivity goods of this invention

[Drawing 2] The top view of the absorptivity goods shown in drawing 1

[Drawing 3] The sectional view of the III-III line of the absorptivity goods shown in drawing 1 and drawing 2

[Drawing 4] The bottom view which looked at the absorptivity goods shown in drawing 1 and drawing 2 from the background

[Description of Notations]

1 Panties Liner

1e Periphery

2 Round Seal Section

3 Boundary Line

10 Surface Layer

11 Absorption Layer

12 Flesh-Side Surface Layer  
12r Thermoplastics layer  
13a, 13b Adhesives  
30 Pressure-sensitive Adhesive Layer

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[Translation done.]

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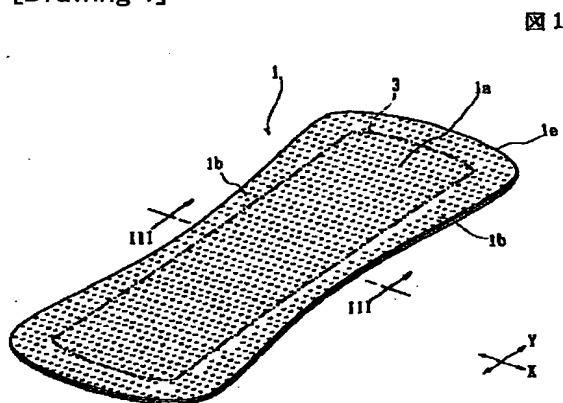
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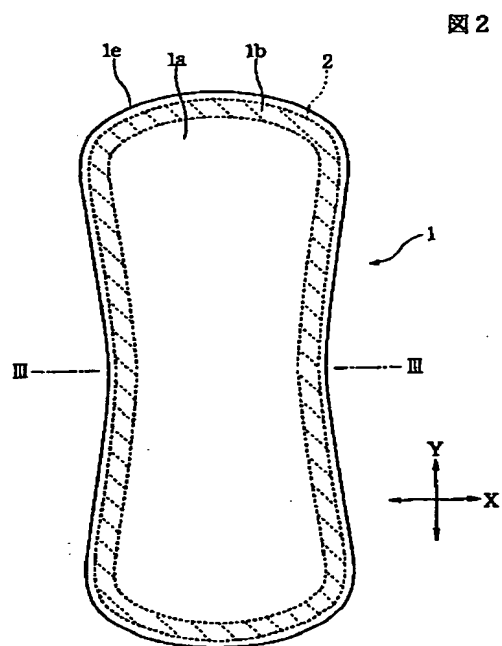
**DRAWINGS**

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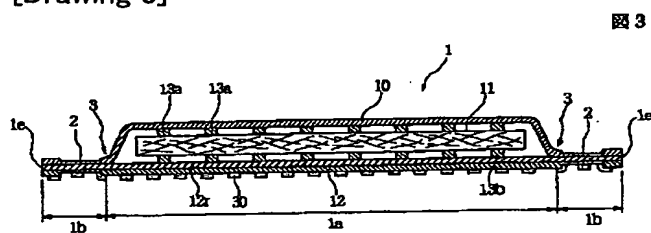
[Drawing 1]



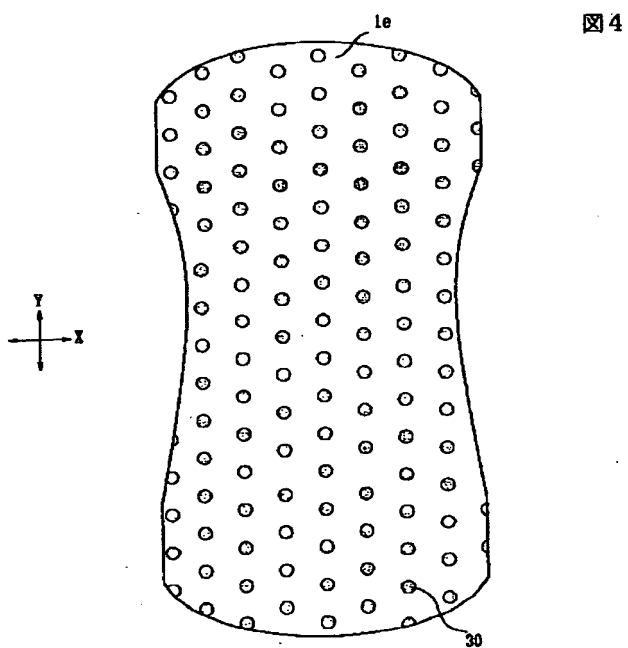
[Drawing 2]



**[Drawing 3]**



[Drawing 4]



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[Translation done.]